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A SUMMER FORAY OF WILLAMETTE INDUSTRY LANDS ON THE WESTERN HIGHLAND, 29 JUNE – 1 JULY 2001

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ABSTRACT. From 29 June – 1 July 2001, Willamette Industries hosted the Tennessee Ornithological Society on a Summer Foray to the company's lands on the Western Highland Rim in Tennessee. The purpose of the trip was to identify the breeding birds found on Willamette lands and the nesting habitats utilized by them. A total of 68 species was recorded during the foray in a variety of habitats. Large numbers of early successional species were recorded in the clearcuts resulting from Willamette's even-aged forest management. In addition, forest birds were found in mid-successional woodlands located on the properties. Dispersion of early successional habitats and tract sizes on Willamette land holdings seem sufficient to maintain populations of priority early successional species; however, tract sizes and age classes of forested habitat may be insufficient to adequately sustain priority forest bird populations.

INTRODUCTION

Several studies have inventoried and monitored bird populations in Tennessee in the geographical area known as the Western Highland Rim. These investigations include point count routes the Tennessee Wildlife Resources Agency (TWRA) has supported on Westvaco Industries landholdings, the Tennessee National Wildlife Refuge, Land Between the Lakes National Recreation Area (LBLNRA), and Laurel Hill Wildlife Management Area (WMA) as well as several census blocks covered by volunteers from the Tennessee Ornithological Society (TOS) during the Tennessee Breeding Bird Atlas Project (Nicholson 1997, Roedel 2001). Other studies have emphasized more detailed data collection on habitat use and nest success for birds such as Buehler and Miles (1996) study of bird use of wildlife openings on the LBLNRA during 1993 and 1994.

Despite the existence of several avian datasets from portions of the Western Highland Rim in Tennessee, data for the central portion of the region is incomplete. At the invitation of Willamette Industries, members of the TOS participated in a foray from 29 June – 1 July 2001 on the Western Highland Rim focusing on areas in Perry, Hickman, Lewis and Humphries Counties. The objectives of the foray were to collect basic information on avian species occurrence and habitat use, with emphasis on species of conservation concern, to provide to Willamette Industries.

WILLAMETTE PUBLIC HUNTING AREA

Willamette owns approximately 71,500 ha of forestland in seven middle Tennessee counties including Humphries, Perry, Hickman, Lewis, Lawrence, Wayne, and Maury Counties. These lands are primarily managed for the production of hardwood timber; however, some pine plantations have also been established for fiber production. Most Willamette properties lie on the Western Highland Rim, an area with rolling to steep topography dissected by streams that mostly drain westward. The terrain is dominated by limestone and chert hills, with elevations ranging from 110 m to 335 m (Nicholson 1997).

Willamette has employed an "open gate policy" for years on its lands in Tennessee through participation in the TWRA's Public Hunting Lands Program. Partnership in this program opens most Willamette holdings in Tennessee for many types of public recreational use.

Recently, Willamette has also shown an interest in acquiring information on nongame resources found on its lands. A preliminary Wildlife Management Plan written cooperatively by TWRA and Willamette Industries states the following goal pertaining to nongame wildlife (Rooker 2000):

> "To effectively manage, enhance, and protect Willamette nongame wildlife populations and diversity within their associated habitats and to provide for public use (including education and recreation), understanding, and enjoyment of these resources."

Willamette expressed an interest in documenting the effects of forest management on nongame wildlife and hosted the Tennessee Ornithological Society (TOS) and TWRA for the breeding bird foray.

SURVEY METHODS FOR TOS 2001 SUMMER FORAY

Thirteen individuals representing TOS chapters from Knoxville, Nashville, Bristol, and Elizabethton participated in the foray. On the mornings of 29-30 June 2001, four groups of bird surveyors covered designated areas of the Willamette lands. Censusing began at 0630 CST each morning and continued until dusk, with an approximate 2-hour break around 1200 CST. Survey efforts mostly focused on tracts in Hickman and Perry Counties; however, some sites in Lewis County were also covered. One group also surveyed additional sites in Humphries County on 1 July. Each group was lead by a representative from Willamette Industries serving as guide.

Willamette primarily practices even-aged hardwood management in Tennessee, utilizing 124-ha clearcuts and a rotation length of 60-80 years to produce quality hardwood saw logs. Silvicultural techniques employed by Willamette result in a variety of successional stages. Surveys sought to maximize the exposure to different successional stages and were conducted in clearcuts (both current-year cuts as well as regenerating cuts several years old), tornado blowdowns, mid-successional sawtimber (60-70 years old), 10-15 year-old hardwood pole timber stands, riparian forest, mixed pine/hardwood stands, pine plantations, and some mid-successional stands that had undergone a pre-commercial thinning.

A local land trust, the Swan Conservation Trust, used volunteers during the past 2 years to conduct two bird surveys on their property and adjacent Willamette lands in Lewis County. The Swan Conservation Trust owns several tracts of land along Big Swan Creek in Lewis County. Surveys were conducted there on 10 September 2000 and 29 April 2001 (Rohrbach unpublished data).

SURVEY RESULTS

A total of 68 species of birds was recorded on Willamette lands (Table 1). These included 11 out of the 20 highest priority species for the Interior Low Plateau Physiographic Region (the physiographic province containing the Willamette lands), as ranked by Partners in Flight (Table 2) (Ford et al. 1998). Five of these priority species, Prairie Warbler (*Dendroica discolor*), Wood Thrush (*Hylocichla mustelina*), Yellow-billed Cuckoo (*Coccyzus americanus*), Eastern Wood-pewee (*Contopus virens*), and Field Sparrow (*Spizella pusilla*), were commonly encountered on the Willamette lands during surveys. An additional five, Blue-winged Warbler (*Vermivora pinus*), Worm-eating Warbler (*Helmitheros vermivorus*), Louisiana Waterthrush (*Seiurus motacilla*), Kentucky Warbler (*Oporornis formosus*), and Red-headed Woodpecker (*Melanerpes erythrocephalus*), were encountered less frequently in appropriate habitats on Willamette lands.

Eleven species not detected during the TOS foray were recorded during surveys of property owned by the Swan Conservation Trust. These included Belted Kingfisher (*Ceryle alcyon*), Chestnut-sided Warbler (*Dendroica pensylvanica*), Magnolia Warbler (*Dendroica magnolia*), Yellow-rumped Warbler (*Dendroica coronata*), Black-throated Green Warbler (*Dendroica virens*), Blackburnian Warbler (*Dendroica fusca*), Palm Warbler (*Dendroica palmarum*), Black-and-white Warbler (*Mniotilta varia*), Rose-breasted Grosbeak (*Pheucticus ludovicianus*), White-throated Sparrow (*Zonotrichia albicollis*), and Baltimore Oriole (*Icterus galbula*). Swan Conservation Trust surveys took place prior to and following the nesting season, therefore several of the species recorded are not species that nest locally, but rather migrants moving through the area.

DISCUSSION

Owning approximately 71,500 ha, Willamette is a very influential landowner on the landscape of the Western Highland Rim. Perhaps the greatest roles that Willamette Industries land in Tennessee play for birds are preservation of large

Table 1. Bird species recorded on TOS Summer Foray on Willamette lands in Hickman, Perry, Lewis, and Humphries Counties, Tennessee 29 June – 1 July 2001.

	Habitat [1]				
Species	Mid-succ. hardwoods	Mixed pine-hardwood	Early succ.	Riparian	Other
Great Blue Heron					X
Broad-winged Hawk	X				
Red-shouldered Hawk	X			X	
Red-tailed Hawk	X		X		
Turkey Vulture	X	X	X		
Northern Bobwhite			X		
Wild Turkey	X				
Killdeer					X
Mourning Dove	X		X		
Yellow-billed Cuckoo	X		X	X	
Barred Owl	X				
Eastern Screech Owl	X				
Ruby-throated Hummingbird	X		X		
Chimney Swift	X		X		
Northern Flicker	X	X	X		
Downy Woodpecker	X	X			
Hairy Woodpecker	X	X			
Pileated Woodpecker	X	X			
Red-bellied Woodpecker	X	X			
Red-headed Woodpecker	X	X			
Acadian Flycatcher	X	X		X	
Great Crested Flycatcher	X	X		X	
Eastern Kingbird			X		
Eastern Phoebe	X	X	X		
Eastern Wood-pewee	X	X			
Purple Martin			X		
Northern Rough-winged Swallow			X		
American Crow	X	X	X		
Blue Jay	X	X	X		
Carolina Chickadee	X	X			
Eastern Tufted Titmouse	X	X			
White-breasted Nuthatch	X	X			
Carolina Wren	X	X			
Blue-gray Gnatcatcher	X	X			
Eastern Bluebird			X		
American Robin	X	X	X		
Wood Thrush	X	X			
Northern Mockingbird			X		
Brown Thrasher			X		
Cedar Waxwing	X		X		
Red-eyed Vireo	X	X			
White-eyed Vireo			X		
Yellow-throated Vireo	X				
Yellow-breasted Chat			X		
Ovenbird	X				
Northern Parula				X	
Blue-winged Warbler			X		

Table 1. *continued*

Species	Mid-succ. hardwoods	Mixed pine-hardwood	Early succ.	Riparian	Other
Hooded Warbler	X				
Kentucky Warbler	X				
Pine Warbler		X			
Prairie Warbler			X		
Worm-eating Warbler			X		
Yellow-throated Warbler	X				
Louisiana Waterthrush				X	
Common Yellowthroat			X		
Scarlet Tanager	X	X			
Summer Tanager	X	X			
Indigo Bunting	X	X	X		
Northern Cardinal	X	X	X		
Blue Grosbeak			X		
Chipping Sparrow		X			
Field Sparrow			X		
Eastern Towhee	X	X	X		
Red-winged Blackbird			X		
Brown-headed Cowbird	X	X	X		
Eastern Meadowlark			X		
Orchard Oriole	X	X			
American Goldfinch			X		

Bold type indicates species of high concern in PIF Interior Low Plateau Physiographic Region.

[1] Description of habitat codes:

Mid-succ. hardwoods = mid-successional forest, 60-80 year-old hardwood stands.

Mixed pine-hardwood = mid-successional stands with hardwood and pine components.

Early succ. = early successional habitat, mostly clearcuts but also including tornado blowdowns, roadsides, log landings, powerline right-of-ways.

Riparian = riparian woodland.

Table 2. High priority breeding landbirds for the Interior Low Plateau Physiographic Region, based on Partners in Flight concern scores. Species of high concern are those with a score of 22 or higher.

Species	Priority Score	Species	Priority Score
Bewick's Wren	28	Bell's Vireo	23
Cerulean Warbler	28	Dickcissel	23
Henslow's Sparrow	27	**Wood Thrush**	22
Swainson's Warbler	26	Prothonotary Warbler	22
Bachman's Sparrow	25	**Kentucky Warbler**	22
Blue-winged Warbler	24	**Yellow-billed Cuckoo**	22
Prairie Warbler	24	**Chimney Swift**	22
Worm-eating Warbler	24	**Eastern Wood-pewee**	22
Louisiana Waterthrush	23	**Field Sparrow**	22
Whip-poor-will	23	**Red-headed Woodpecker**	22

Bold type indicates species recorded during Willamette survey.

forested blocks and the large, early successional habitat patches it maintains for nesting birds through forest management. Willamette's management creates a diverse array of forest age classes that include early successional, regenerating forests as well as forest stands 60-70 years old. Willamette's continued management for hardwood production will prevent fragmentation and conversion of their lands to other uses that are incompatible with nesting birds (e.g. development and agriculture) and help ensure that the largely forested landscape of the Western Highland Rim will remain intact. Studies on avian productivity in the Midwest have shown that increased forest fragmentation at the landscape scale results in decreased reproductive success for birds, primarily due to increased nest predation and increased parasitism from the Brown-headed Cowbird (*Molothrus ater*)(Robinson et al. 1995). Robinson et al. (1995) determined the critical threshold where reproductive failure began to negatively influence songbird populations occurred when the fraction of the landscape covered by forest dropped below 70%. Preservation of current forest cover on the Western Highland Rim may be the central criterion to preserving its bird populations.

Willamette Industries' land managed for hardwood production on the Western Highland Rim in Tennessee exhibits a diverse avian community made-up of species with varying ecological needs. This avian diversity is directly correlated with the interspersion of habitat patches created by forest management. Several habitat types are well-represented on Willamette lands. Regenerating clearcuts and tornado blowdowns have created large blocks of brushy, shrubby, early successional habitats. Powerline right-of-ways and roadsides also present an opportunity for maintenance of early-successional habitat on Willamette lands. Mid-successional forests (60-80 years of age) provide habitat for some forest-nesting species, and the ecotones between forested and cut habitats, along with young forest habitats, also provide additional habitat.

Ecotones, areas where two different habitats meet, always exhibit greater species richness. Here, species occurring in each of the overlapping habitats commingle with species unique to the edge itself. This habitat patchiness is beneficial for some species, but not for all. Species that are specialists for either habitat type, that need large habitat blocks, typically fare poorly or fail to occupy such areas. The term "area-sensitive" is often employed, explaining the tendency for these species to occupy and nest successfully only in habitats that are larger than a critical size threshold.

Although early successional and mature forest species may exhibit area sensitivity, critical patch sizes required by early successional species tend to be smaller than those needed by forest interior species. For example, Yellow-breasted Chats (*Icteria virens*) and Field Sparrows both demonstrate area sensitivity, not being found in the smallest tracts of early successional habitat. However, adequate patch sizes for these species are <25 ha (Askins 1993; Lanham and Guynn 1998). In contrast, recommended patch sizes for Cerulean Warblers (*Dendroica cerulea*), often cited as the quintessential forest interior species of the eastern United States and the nesting species with the highest ranking PIF score found on the Western Highland Rim in Tennessee, are 4275 ha in the Mid-Atlantic States and 9760 ha in the Mississippi

Alluvial Valley, although some variation in optimal patch sizes for forest interior species likely exists between geographic areas (Robbins et al. 1989).

Both Yellow-breasted Chats and Field Sparrows are abundant on Willamette properties along with a suite of other early successional species. Many forest-nesting songbirds were recorded on Willamette lands; however, some species needing larger, mature forest tracts, e.g. Cerulean Warbler and Black-and-white Warbler, appear absent or less abundant. Land owned by Willamette Industries has great potential to influence populations of early successional species; however, its potential to provide quality habitat for late successional forest birds is questionable under current management. Currently, forest tracts are mostly mid-successional and small, as forest management is centered on managing units in 99 - 124-ha blocks, the standard clearcut size used in Willamette's forest management. The PIF plan for the Interior Low Plateau recommends that 100 areas be managed for mature hardwood bird species in the region. Each area is defined as a forested block of 3000 to 4000 ha within which, at any given time, a core of about 1200 ha of mature hardwood forest is managed for Cerulean Warblers and other forest interior species (Ford et al. 1998). Creation of suitable habitat for Cerulean Warblers on timber industry lands would likely require consolidation of some smaller tracts and longer rotation length between cuttings, options that may prove economically difficult within the industry.

ACKNOWLEDGEMENTS

Travel expenses for all participants in the foray were paid by Willamette Industries. Tom Hughes, Steve Galliher, Mark Perry, and Dan Wernick of Willamette served as guides for the survey. Surveyors for the foray included Wallace Coffey, Glenn Eller, Troy Ettel, Kathleen Kramer, Howard Langridge, Ron Lapp, Nancy Moore, Polly Rooker, Boyd Sharp, Chris Sloan, Anna Varney, Dave Worley, and Mary Zimmerman.

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The Migrant 72 (3): 84-86, 2001.

MINUTES OF THE FALL 2001 TOS BOARD OF DIRECTORS MEETING

The Fall meeting of the Tennessee Ornithological Society (TOS) was held on 2-4 November 2001 at Knoxville, Tennessee, hosted by the Knoxville TOS Chapter. In addition to the Directors' Meeting, field trips were taken to Great Smoky Mountains National Park, Kyker Bottoms Wildlife Refuge, Chota Refuge, and Kingston Steam Plant. The Paper Session included papers on the state Golden-winged Warbler Atlas Project, Grassland Birds at Fort Campbell, Ruffed Grouse Nesting Success and Brood Ecology, Cooper's Hawk Winter Ecology at Ames Plantation, Bald Eagle Monitoring in Tennessee, and Shade-grown Coffee and Birds in the Dominican Republic.

The meeting of the TOS Directors was called to order by TOS President Chuck Nicholson. Secretary Knox Martin reported a quorum present. Copies of the minutes of the Spring meeting were available for members to read. The president requested that the approval of the minutes be postponed until the end of the meeting to give members a chance to read them before voting on approval.

REPORT OF OFFICERS. No reports.

DIRECTORS AT LARGE. No reports.

SECRETARY'S REPORT. No report.

TREASURER'S REPORT. No report.

CURATOR'S REPORT. No report.

THE MIGRANT. Editor Chris Welsh reported that the next issue of *The Migrant* was at the printer and should be mailed to members very soon. The combined September/December 2000 issue should be out in January of 2002. Material is needed for future issues, so if you have articles of interest, rare or unusual sightings, or other items worth publishing, send them to Chris.

THE TENNESSEE WARBLER. Carolyn Bullock reported for Editor Theresa Graham that articles are also needed for *The Tennessee Warbler*. The December issue is being worked on, so if anybody has articles of interest, get them to Theresa as soon as possible.

NOMINATING COMMITTEE. Nominations are needed for a President-Elect by the Spring 2002 state meeting. Ron Hoff, Wallace Coffey, and Virginia Reynolds are on the committee, so if you have suggestions for a new president see one of them. This term the new president should be from West Tennessee. Also, Treasurer David Trently has asked to be relieved from his post soon, so if anybody has suggestions for a new TOS Treasurer see either a member of the Nominating Committee or Chuck Nicholson.

BIRD RECORDS COMMITTEE. Chris Sloan reported that there will be two positions opening up on the committee to replace two members whose terms have expired. Two names will be submitted for each of the two positions, so see Chuck or Kevin Calhoon if you are interested.

CONSERVATION AND RESEARCH FUNDING COMMITTEE. Melinda Welton reported that the fund currently has $11,000 in it. Two projects that were funded in the

last year have been completed. Allan Trently submitted his report on the management needs of the Golden-winged Warbler, and Michael Welch submitted his report on point counts on the Cherokee WMA. Two recent actions included a grant of $905 to buy over $2000 worth of binoculars for the Dominican Republic to be used in several projects around the country, and a project involving the study of Sandhill Cranes at Hiawasee NWA to try and determine if the cranes are increasing their range into Tennessee or just staying here for the winter before moving on to their historic breeding habitat. The crane study project has requested a grant of $1575.00. This will pay for expenses for two assistants. A motion was made by Chris Sloan and seconded by Chris Welsh to approve the grant with the understanding that a paper will be submitted to *The Migrant* detailing the results of the study. The committee voted to approve the grant with the stipulation that TWRA would be involved as well. The vote to approve was unanimous. Melinda also reported that the committee had written two letters concerning conservation efforts around the country.

COLLATERAL MATERIALS. Carolyn Bullock reported that $11.00 worth of patches and decals had been sold since the Spring meeting. She also had them available for sale for a cost of $2.50 per patch or $3.00 per decal. Chuck Nicholson reported on an interest in selling TOS tote bags at meetings or on the website. A motion was made by Carolyn Bullock to buy 100 bags for sale at meetings or by the chapters. Virginia Reynolds seconded the motion. The vote to approve the motion was carried with one "no" vote.

TOS WEBSITE. Get all chapter information up to date. Also make sure there is an up to date list of officers for each chapter. This would be a big help to the secretary.

OLD BUSINESS. Troy Ettel reported on the current CARA situation. Tennessee did not get the full CARA amount as originally hoped. The bill was changed in Congress at the last minute and Tennessee got about $800,000 to $830,000. TWRA has a slate of approved projects to use the money for. The amount of money may double in 2002 so Tennessee will get twice as much, although still less than originally planned. Tennessee applied for $5,000,000 but will probably not get it.

The Smith Bend Refuge was officially opened in August. President Nicholson represented TOS at the opening ceremonies.

Last spring it was decided to continue allocating state directors in the same manner as always until the TOS Constitution could be reviewed. If changes are needed it should be brought up at the next state meeting. Now is the time for review. The TOS Secretary reported that the constitution reads as follows:

> Article 4, Section 2 - There shall be elected for each chapter a director for each 10 members or major part thereof.

This says members, not memberships. Should it be for each 10 memberships? What about family memberships? What is the definition of a member? The number of directors could possibly be increased to a maximum of five for every chapter if each member is counted rather than the number of memberships. Whatever the conclusion, it will be necessary to amend the TOS Constitution. Virginia Reynolds reported that it would be necessary to print the changes in the next newsletter and vote on it at the

next meeting in the Spring. Chris Sloan disagreed as to the need to amend the constitution and thought it would be necessary only to issue a resolution that a family membership would be treated as two members. Dev Joslin made a motion from the floor that a family membership would be defined as being two members. Dan Mooney seconded. After some discussion from the floor the motion was restated as "for the purposes of determining representation on the Board of Directors, count the family membership as two members". The resolution passed with a unanimous vote.

Melinda Welton requested comments on the possibility of TOS forming an official partnership on the international level. She had been in discussion with the Tennessee Chapter of the Nature Conservancy. They have international ties with both Guatemala and the Dominican Republic. We have informal ties with several countries that are connected with birds of Tennessee, but do we want to make a formal proposal for ties with birding groups in either country? There would be possibilities of field trips to these countries as well as joint conservation projects involving migrants from Tennessee. It would be more of a sharing of ideas between countries, and it would probably help them look more professional if they had international links. Virginia Reynolds pointed out that there were many needy countries, so why single out these two. Chris Sloan pointed out that both countries are connected to Tennessee by the migrant birds that spend time in both countries. Also they are connected through Partners In Flight programs. Chris Sloan made a motion to pursue a partnership with the Hispaniola Ornithological Societies to explore other options in ways that the two can work together to preserve the birds we share. The motion was seconded by Rick Knight. The motion was passed with two "opposed" votes.

NEW BUSINESS. The Spring 2002 TOS meeting will be held at Reelfoot Lake State Park on 3-5 May 2002. Headquarters may or may not be at Air Park Inn. Wayne Peterson of the Massachusetts Ornithological Society will be the guest speaker. All meeting information will be available on the TOS website. There is no sight yet for the Winter Meeting, but it may be at Pickwick Landing State Park in February of 2002. Target date is 8-10 February 2002.

A question from the floor concerned the TOS position on the closing of Tennessee state parks. President Nicholson asked for a resolution that TOS express its displeasure with the administration on the closing of the state parks and encourage them to find other ways of keeping them open. The motion was made by Chris Sloan and seconded by Jo Ann Routledge. Troy Ettel wanted to add that TOS was concerned about the necessity of letting some of the parks be removed from the state parks system and be closed permanently. The vote to approve was unanimous.

Troy Ettel introduced a resolution that TOS adopt and support the Important Bird Area Program as a partner with TWRA with representatives sitting on technical and steering committees helping to see this program to a conclusion. The motion was seconded by Martha Waldron. The vote to approve the resolution was unanimous.

A motion was made and seconded to approve the minutes with minor corrections. The vote to approve was unanimous.

Knox Martin

Recording Secretary

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ABSTRACTS OF PRESENTATIONS FROM THE FALL 2001 TOS MEETING

A COMPARISON OF UNLIMITED DISTANCE POINT COUNTS, TERRITORY MAPPING, AND ACOUSTIC MONITORING AT FORT CAMPBELL MILITARY RESERVATION

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This research tested the effectiveness of acoustic monitoring as an alternative method to surveying grassland birds where human access may be restricted. The study was conducted in native grassland habitat in a remote area of Fort Campbell military base on the Tennessee-Kentucky state line. The acoustic monitoring system was comprised of four recording units. A 9-ha plot (300m X 300m) was established, and the four monitoring stations were located at grid intersections with 150m spacing between each station. On 10 mornings during the breeding season in July 2000, the site was acoustically monitored for 2 hours. Avian use of these sites was also monitored by four 10-minute, unlimited distance point counts at each monitoring station. A territory-mapping census of breeding birds was conducted across the study area as well. Recordings were analyzed aurally or by computer software.

A total of 45 species were identified by all three methods (point counts, territory mapping, and acoustic) combined. The number of species detected by the acoustic monitoring was greater than the number of species detected by unlimited distance point counts and territory mapping (40, 37, and 30 species, respectively). The mean number of species detected by the 10-minute unlimited distance point counts and 10-minute acoustic method were significantly different (Paired *t*-test, $P<0.001$). Based on analysis of the entire 120 minutes of acoustic monitoring, more than 80 percent of species were detected within the first 40 minutes on the first 4 days of monitoring. This suggests that forty minutes/day and 4 days of recording can be applied as a minimum guideline for an acoustic monitoring program for grassland birds at Fort Campbell. Our results suggest that acoustic monitoring may be a valuable method for monitoring avian diversity in restricted and remote areas where human access is limited.

WINTER ECOLOGY OF COOPER'S HAWKS ON AMES PLANTATION

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Breeding bird survey data for Tennessee suggest that Cooper's Hawk (*Accipiter cooperii*) populations are increasing. At the same time, Northern Bobwhite (*Colinus virginianus*) populations have declined precipitously. Many quail biologists have suggested that the decline in quail populations may in part be linked to increasing avian mortality from increasing raptor populations. The objectives of the hawk project on Ames Plantation were to determine Cooper's Hawk winter habitat use and home range size.

The study area for this project was Ames Plantation, Tennessee located in southwestern Tennessee. Ames Plantation is comprised of a variety of cover types including hardwood forest, mixed forest, pine forest, crop fields, old fields, grasslands, hardwood conversion areas, and fencerows.

We trapped Cooper's Hawks with bal chatri traps baited with House Sparrows (*Passer domesticus*) and fitted captured hawks with radio transmitters. Using radio telemetry, Global Positioning Systems, and Geographical Information System (GIS) procedures, diurnal and roost locations were obtained for five Cooper's Hawks. Cover types for these locations were determined and habitat variables were measured for the roost sites.

One male home range was 331 ha (95% minimum convex polygon) and the mean size of female home ranges (n=5) in winter was 836 ha. Diurnal winter habitats used by Cooper's Hawks were ranked in order of most preferred to least preferred as follows: Forests ≥ Edge ≥ Field ≥ Other, and were found to be significantly different in the compositional analysis (Λ=0.1165, F=7.58, P=0.065). Cooper's Hawks used forests more than expected and fields less than expected compared to their availability (N=458, c^2=69.46, df=8, P<0.0001).

Twenty-two roost sites were located in 1999/2000 and 34 roost sites were located in 2000/2001. Vertical cover (P=0.033), canopy cover (P=0.003), and canopy cover variance (P=0.035) were greater in roost sites than random sites, whereas the height of the overstory (P=0.067) was (marginally) lower in roosts than in random sites. Edges and fencerows were used more than expected for roosting, while hardwood stands were used less than expected (c^2=21.67, P=0.0002). Cooper's Hawks roosted in dense honeysuckle, briar, and cedar thickets near the ground under canopies that were highly variable.

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GRASSLAND BIRDS AT FORT CAMPBELL, KENTUCKY: EFFECTS OF FIELD SIZE AND BURNING ON DISTRIBUTION AND REPRODUCTIVE SUCCESS

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Grassland birds have declined sharply over the last 30 years based upon data from the U.S. Fish and Wildlife Service's Breeding Bird Surveys (BBS). Fort Campbell Military Reservation, located on the Kentucky-Tennessee border, has maintained a significant amount of native grass fields for training exercises through prescribed burning. This research project located and monitored grassland bird nests at Fort Campbell during the breeding seasons of 1999-2000, focusing on Henslow's Sparrow (*Ammodramus henslowii*) and Grasshopper Sparrow (*A. savannarum*) nests. Vegetation characteristics were collected at nests, male perch sites, and random points to identify key parameters related to nesting and territory habitat, and nesting success. Point counts were conducted in native grass fields to document avian distribution related to field size and burn history.

A total of 512 grassland bird nests representing 30 species were located and monitored in 1999 and 2000 including 49 Henslow's Sparrow and 54 Grasshopper Sparrow nests. Henslow's Sparrows occupied large, older burned fields consisting primarily of tall, native grasses. Grasshopper sparrows were located in large fields with short, cool-season grasses. Other declining species of high concern nesting on Fort Campbell included Prairie Warbler (*Dendroica discolor*), Yellow-breasted Chat (*Icteria virens*), Indigo Bunting (*Passerina cyanea*), Dickcissel (*Spiza americana*), Field Sparrow (*Spizella pusilla*), Bachman's Sparrow (*Aimophila aestivalis*), Lark Sparrow (*Chondestes grammacus*),and Eastern Meadowlark (*Sturnella magna*).

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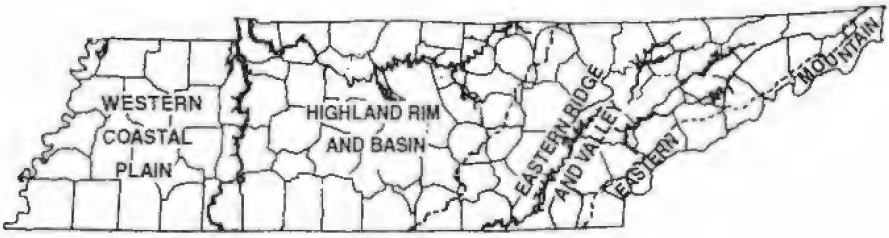
The Migrant 72 (3): 90-100, 2001.

THE SPRING SEASON

RICHARD L. KNIGHT, Editor



1 MARCH - 31 MAY 2001

Dry conditions and near-seasonal temperatures prevailed across the state this spring. There were few cold fronts to ground migrants during most of the season, but a couple of fronts in mid to late May yielded modest fallouts of waterbirds. Apparently most transients moved northward relatively unimpeded. The concensus among birders statewide was that overall numbers of migrants were low, but that species diversity was good.

Notable sightings included the following. Glossy Ibises were found at opposite ends of the state. A rare springtime Wood Stork was reported near Chattanooga. A White-tailed Kite and a Little Gull made brief appearances in the Reelfoot Lake area. A Mississippi Kite became Putnam County's first. Virginia Rails nested in Shady Valley. Several unusual shorebirds were found in East Tennessee, with a good shorebird season occurring in West Tennessee, also. An Olive-sided Flycatcher was remarkably early in the Greene County mountains. Western Kingbirds nested again near Memphis. Scissor-tailed Flycatchers appeared in all but the mountain region. A pair of Bewick's Wrens held on in Rutherford County. Among reports of several uncommon sparrows were Nelson's Sharp-tailed Sparrows in the two eastern regions. Many more interesting sightings can be found in the reports that follow.

Standard Abbreviations

ad - adult
Co - County
Cr - Creek
ers - earliest reported sighting
et al. - and others
Hwy - Highway
im - immature
IMBD - International Migratory Bird Day
Is - Island
L - Lake
lrs - latest reported sighting
max - maximum count
Mtn - Mountain
SP - State Park
WMA - Wildlife Management Area
yg - young

WESTERN COASTAL PLAIN REGION — This was another relatively dry spring. Migration seemed rather unspectacular, with the movement of Swainson's and Gray-cheeked Thrushes unusually poor. Other migrants, including many warblers,

seemed to be in lower than usual numbers. Nevertheless, there were some outstanding finds this season. A Little Gull at Samburg (Reelfoot Lake) on the last day of March caused a lot of excitement, but wasn't subsequently relocated. Also, at Black Bayou, a flock of *Plegadis* ibises, two of which were later identified as Glossy, and a White-tailed Kite proved to be terrific discoveries. Scissor-tailed Flycatchers were found in three localities, while Western Kingbirds built their second confirmed nest in the state at the EARTH Complex. Lark Sparrows were reported in three counties, while Grasshopper Sparrows were noted in four.

Loon - Ibis: **Red-throated Loon:** 8 Mar (2) Pace Point (James Brooks). **Pacific Loon:** 4 Mar (2) Port Rd. Overlook, Henry Co (FLB, SAB, RDH, DM); 8 Mar (1) Pace Point (James Brooks). **Common Loon:** 5 May (1) Pace Point (TOS), lrs. **Pied-billed Grebe:** 27 May (1 on nest) Shelby Farms (DDP, MTOS). **Horned Grebe:** 11 Mar (13) Reelfoot L (WGC, NaM), max. **American White Pelican:** thru 6 Apr (max 2000 on 31 Mar) Reelfoot L (WGC, NaM, MCT, PDC, JDS, CAS); 4 Mar (69) Eagle Lake WMA (JRW); 10-11 Mar (1) Robco L (WRP, JRW); 28 May (76) President's Is., Shelby Co (JRW). **American Bittern:** 22 Apr/1 May (2/1) Whites L Refuge (WGC). **Least Bittern:** 13 Apr/12 May (1) Black Bayou (KL, BL, BF, MAG, JRW); 22 Apr (3) Reelfoot L (KL, BL). **Black-crowned Night-Heron:** 12 May (4) Black Bayou (BF, MAG, JRW); 14 May (1) Carroll Co (MCT). ***Plegadis* sp.:** 21 Apr (9) Black Bayou (WGC, CAS). **Glossy Ibis:** 28-29 Apr (2) Black Bayou (MLB, JSD, MAG, CAS, MCT, JRW, KL, BL, NaM).

Waterfowl: **Greater White-fronted Goose:** 1 Mar (5) Dyer Co (WGC); 10 Mar (1) Lake Co (WGC). **Greater White-fronted Goose x Canada Goose (hybrid):** 21 Mar (1) Shelby Farms (WRP, VBR). **Mute Swan:** 7 Mar (1) Sky L., Shelby Co (CHB, WRP, VBR, Barbara Wilson). **American Wigeon:** 15 May (2) Whites L Refuge (WGC), lrs. **American Black Duck:** 21 Apr (1) Black Bayou (KL), lrs. **Northern Pintail:** 15 May (1) Whites L Refuge (WGC), lrs. **Green-winged Teal:** 31 Mar (10,000) Reelfoot L (PDC, JSD, CAS), max; 1 May (1) Whites L Refuge (WGC), lrs. **Canvasback:** 8 Apr (1) EARTH Complex (JRW), lrs. **Greater Scaup:** 10 Mar (8) Robco L (WRP); 17 Mar (30) EARTH Complex (JRW). **Lesser Scaup:** 3 Mar (5,000) EARTH Complex (JRW), max; 24 May (1) Reelfoot L (NaM), lrs. **Bufflehead:** 28 Apr (2) Reelfoot L (MAG, MCT, JRW), lrs. **Hooded Merganser:** 29 Apr/27 May (6 including 4 yg/12 yg) Black Bayou (NaM, KL, BL); 1 May (1) Whites L Refuge (WGC); 12 May (14) Lake Co IMBD. **Red-breasted Merganser:** 1/5/10 Mar (69/100/39) Reelfoot L (WGC, MCT, NaM).

Osprey - Rail: **Osprey:** 10 Mar (1)/1-15 Apr (2 on nest) Reelfoot L (WGC, KL, BL); 11/28 Apr (1) Shelby Forest (VH/MTOS). **WHITE-TAILED KITE:** 20-21 Apr (1) Black Bayou (NaM, KL - photo, DMa). **Mississippi Kite:** 4 May (1) Paris, Henry Co (DDP); 4 May (4) Weakley Co (MCT); 14 May (2) Carroll Co (MCT). **Bald Eagle:** 2 nests in Lake Co (WGC, KL, BL, NaM); 1-14 Mar (1 ad, 1 im) Dyer Co (WGC); 3/23 Mar (1 im) Eagle Lake WMA (VBR/JRW); 10 Mar (1 im) Robco L (WRP); 11 Mar (1 ad) EARTH Complex (VBR, JRW); 5 May (2) Henry Co (TOS); 12 May (1 ad, 1 im) Shelby Forest (DDP). **Northern Harrier:** 30 Apr (1) Henry Co (DMa, MCT); 1 May (1) Whites L Refuge (WGC); 12 May (1) Black Bayou (KL, BL, NaM). **Sharp-shinned**

Hawk: 28 May (1) Dyersburg, Dyer Co (KL). **"Harlan's" Red-tailed Hawk:** 8 Mar (1) Trezevant, Carroll Co (MCT). **Rough-legged Hawk:** 21 Apr (1, dark morph) Lake Co (CAS). **Merlin:** 10 Mar (1) Memphis (MaH); 23 Mar (1) Reelfoot L (KL); 27 Mar (1) Shelby Farms (VBR). **Peregrine Falcon:** 8 Apr (1) Eagle Lake WMA (JRW); 17 Apr (1) Black Bayou (NaM); 1 May (1) Reelfoot L (WGC); 12 May (1) Hwy 79W (BF, MAG, JRW); 22 May (1) Madison Co (MAG). **King Rail:** 2-20 May (1) Black Bayou (NaM, JRW). **Sora:** 31 Mar/10-22 Apr/12 May (1) Black Bayou (PDC, JSD, CAS, NaM, KL, BL, WGC).

Shorebirds: **Black-bellied Plover:** 22 Apr/1 May (1/6) Whites L Refuge (WGC); 11-20 May (up to 30) Black Bayou (WGC, KL, BL, NaM); 15 May (10) Dyer Co (WGC); 27 May (4) Lake Co (KL, BL). **American Golden-Plover:** 1 Mar (14) Gibson Co (MAG). **Semipalmated Plover:** 12 May (159) Lake Co IMBD, max. **Black-necked Stilt:** 18 Mar (1) Eagle Lake WMA (VBR, JRW); 6/14 Apr (3/2) Black Bayou (NaM, KL); 8 Apr/12 May (25/47) N. Treatment Plant, Shelby Co (MaH, Margaret Jefferson, Ed Thomas); 22 Apr/25 May (4) EARTH Complex (CHB, VBR, MGW, JRW). **American Avocet:** 20 May (3) EARTH Complex (JRW). **Willet:** 4 May (4) Paris Landing SP (DDP). **Upland Sandpiper:** 7 Apr (3) Eagle Lake WMA (JRW); 15 Apr (8) EARTH Complex (JRW); 12 May (1) Hwy 79W (MAG). **Ruddy Turnstone:** 12/15 May (1) Black Bayou (KL, NaM); 13-20 May (1) EARTH Complex (DW, LD, CHB, VBR, JRW). **Sanderling:** 28 May (1) EARTH Complex (JRW). **White-rumped Sandpiper:** 6/12 May (1) Black Bayou (NaM, Hap Chambers, BF, MAG, JRW); 15 May (15/2) Lake/Dyer Cos. (WGC); 18/23 May (3/10) Shelby Farms (WRP/CHB, VBR); 26 May (38) EARTH Complex (JRW). **Baird's Sandpiper:** 27 May (1) Shelby Farms (MTOS). **Dunlin:** 8 Apr (1) Eagle Lake WMA (JRW); 1-27 May (max 76 on 20 May) Black Bayou (WGC, KL, BL, JRW, NaM); 12-28 May (1-4) EARTH Complex (Jon Dunn, BP-B, DW, LD, JRW). **Stilt Sandpiper:** 22 Apr (4)/12-26 May (2) Black Bayou (WGC, KL, BL, Hap Chambers, BF, MAG, JRW); 15 May (1) Mud L., Lake Co (WGC). **Short-billed Dowitcher:** 1 May (53) Reelfoot L (WGC). **Long-billed Dowitcher:** 8 Apr (18) Eagle Lake WMA (JRW). **Wilson's Phalarope:** 22/25 Apr (1/3) Black Bayou (WGC, KL, BL).

Gull - Owl: **Laughing Gull:** 11 Mar (1) EARTH Complex (VBR). **Franklin's Gull:** 31 Mar (1) Lake Co (PDC, JSD, CAS); 27 May (3) Samburg (JRW, NaM). **LITTLE GULL:** 31 Mar (1 ad) Samburg (CAS, PDC, JSD), second state record. **Bonaparte's Gull:** 1 Apr (2,000) Samburg (KL, BL), max. **Herring Gull:** 28 Apr (6) Reelfoot L (MAG, MCT, JRW). **Lesser Black-backed Gull:** 4 Mar (1) Britton Ford, Henry Co (FLB, SAB, RDH, DM). **Glaucous Gull:** 4 Mar (1) Paris Landing SP (FLB, SAB, RDH, DM). **Caspian Tern:** 22-29 Apr/13 May (1-2) EARTH Complex (CHB, VBR, MGW, LD, DW); 22 Apr - 16 May (1-9) Reelfoot L (WGC, KL, BL, NaM, JRW). **Common Tern:** 12/16 May (5/1) Reelfoot L (Jon Dunn, JRW, NaM). **Forster's Tern:** 10 Mar (1) Robco L (WRP); 22 Apr (4) Reelfoot L (WGC, KL, BL); 12 May (26) Lake Co IMBD. **Least Tern:** 15 Apr (1) Samburg (KL, BL); 22 Apr/26 May (1/38) EARTH Complex (CHB, VBR, JRW, MAG); 15 May (23) Dyer Co (WGC); 21 May (1) Shelby

Farms (VBR); 27 May (70) Black Bayou (KL, BL). **Black Tern:** 28 Apr - 24 May (1-12) Reelfoot L (MAG, MCT, JRW, NaM, KL); 27 May (20) Shelby Farms (MTOS). **Eurasian Collared-Dove:** reported from Shelby, Lake, Lauderdale, & Madison Cos. (BF, Carl Hardeman, MAG, WRP, GP, MCT, JRW). **Black-billed Cuckoo:** 11-18 May (singles at 3 sites) Lake Co (KL, BL, BF, MAG, JRW); 16 May (1) Shelby Forest (MTOS); 18 May (1) Dyer Co (FCF, JRW). **Barn Owl:** 13 Apr (1) Wolf River WMA, Fayette Co (Susan McWhirter, MGW). **Short-eared Owl:** 1 Mar (5) Dyer Co (WGC); 31 Mar (1) Lake Co (PDC, JSD, CAS).

Flycatcher - Pipit: **Olive-sided Flycatcher:** 21 Apr (2) Memphis (GP); 21/27 May (1/2) Shelby Farms (VBR, MTOS). **Acadian Flycatcher:** 11 Apr (1) Shelby Forest (VH), ers. **Willow Flycatcher:** 12 May (2) Lake Co IMBD; 15 May (1) Carroll Co (MCT). **Least Flycatcher:** 28 Apr (1) Reelfoot L (MLB, JSD, CAS); 12 May (2) Lake Co IMBD; 14 May (1) Shelby Forest (DDP). **Western Kingbird:** 29 Apr - 26 May (1-3, nest, photo) EARTH Complex (WRP, MAG, MCT, JRW, Jon Dunn, BP-B, CHB, VBR). **Scissor-tailed Flycatcher:** 5 May (1) Eagle Lake WMA (Don Colley); 12 May (1) Hwy 79W (BF, MAG, JRW); 19-20 May (2-1) EARTH Complex (Lynn Lesher, JRW). **Warbling Vireo:** 12 May (54) Lake Co IMBD, max. **Philadelphia Vireo:** 5 May (1) Henry Co (TOS, MCT); 12 May (1) Lake Co IMBD; 15 May (1) Memphis (GP). **Bank Swallow:** 28 May (300) Hwy 79W (KL, BL). **Cliff Swallow:** 14 May (35) bridge on Obion R., Carroll Co (MCT). **House Wren:** 14 Apr (2) McKenzie, Carroll Co (Donna & Louise Ward); 19-21 Apr (1) Memphis (GP); 29 Apr (1) Shelby Farms (WRP). **Marsh Wren:** 12 May (2) Shelby Co (VBR, MGW). **American Pipit:** 30 Apr (8) Henry Co (DMa, MCT), lrs.

Warbler - Siskin: **Blue-winged Warbler:** 19 Mar (1) Lake Co (KL), ers; 12 May (1) Shelby Farms (MGW). **Orange-crowned Warbler:** 15-17 Apr (1) Memphis (GP); 22 Apr (1) Shelby Farms (WRP). **Yellow Warbler:** 7 Apr (1) Gibson Co (MAG); 8 Apr (1) Black Bayou (KL, BL). **Cape May Warbler:** 30 Apr (2) Henry Co (DMa, MCT); 4 May (1) Paris Landing SP (DDP). **Prairie Warbler:** 18 May (1) Shelby Co (VBR). **Palm Warbler:** 23 May (1) Shelby Forest (DDP), lrs. **American Redstart:** 8 Apr (1) Eagle Lake WMA (JRW), ers. **Worm-eating Warbler:** 12 May (5) Shelby Forest (MTOS). **Louisiana Waterthrush:** 14 May (14, including 6 fledglings) Shelby Forest (DDP). **Mourning Warbler:** 4 May (1) Paris Landing SP (DDP). **Wilson's Warbler:** 12 May (1) EARTH Complex (Jon Dunn, BP-B). **Canada Warbler:** 29 Apr (1) Shelby Farms (WRP); 23 May (1/1) Shelby Forest/Tipton Co (DDP). **American Tree Sparrow:** 20 Mar (3) Black Bayou (NaM), lrs. **Lark Sparrow:** 28 Apr (1) Black Bayou (MLB, JSD, CAS); 7/15 May (2/1) Henry Co (MCT); 12 May (1) Hwy 79W, Lake Co IMBD; 14 May (1) Carroll Co (MCT). **Grasshopper Sparrow:** 22 Apr - 12 May (2) Shelby Farms (WRP, MGW, MTOS); 23 Apr thru season (2) Gibson Co (MAG); 30 Apr (15) Henry Co (DMa, MCT); 12 May (41) Lake Co IMBD. **LeConte's Sparrow:** 31 Mar (1) Reelfoot L (PDC, JSD, CAS); 1 Apr (1) Shelby Farms (VBR). **Song Sparrow:** 12 May (16) Lake Co IMBD; 20 May (5) Black Bayou (KL, BL). **Lincoln's Sparrow:** 9 Mar (1) Shelby Forest (VBR). **Harris's Sparrow:** 2-30 Apr (1) Alamo, Crockett

Co (Rick Light fide MAG). **Smith's Longspur:** 2 Apr (3) Cates, Lake Co (KL, NaM), lrs at wintering site. **Dickcissel:** 12 May (687) Lake Co IMBD, max. **Orchard Oriole:** 12 May (93) Lake Co IMBD, max. **Baltimore Oriole:** 12 May (96) Lake Co IMBD, max. **Purple Finch:** 1-21 Mar (2-3) Tipton Co (DDP); 7 Mar (1) Kennedy Park, Shelby Co (CHB, Sue Ferguson, WRP, VBR, Barbara Wilson); 18 Mar - 22 Apr (1) Millington, Shelby Co (VH); 12 May (1) Memphis (MaH, Margaret Jefferson, Ed Thomas). **Pine Siskin:** 2 Mar/23 Apr (7/1) Millington, Shelby Co (VH); 17 Mar (5) Tipton Co (DDP).

Locations: Black Bayou - in Lake Co; Eagle Lake WMA - in Shelby Co; EARTH Complex - in Shelby Co; Hwy 79/79W - in Lake Co; Pace Point - in Henry Co; Paris Landing SP - in Henry Co; Reelfoot L - in Lake & Obion Cos; Robco L - in Shelby Co; Samburg - in Obion Co; Shelby Farms - in Shelby Co; Shelby Forest - in Shelby Co; Whites L Refuge - in Dyer Co.

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HIGHLAND RIM AND BASIN REGION — In the Nashville area, the three month spring period had varied temperatures and below average precipitation. March was cool, with the mean daily temperature 5 degrees below average. Temperatures compensated in April and were 5 degrees warmer than normal, while May mean temperatures were typical for that month. Total rainfall for the spring months was well below average. Both March and April had about half the expected amounts of precipitation. This dry spell ended during the last two weeks of May when nearly a full month's worth of rain fell. The timing of this lack of precipitation, indicating the absence of cold fronts during peak passerine migration at the end of April and beginning of May, may explain many observers' comments about the significantly reduced number of migrants at normally productive sites.

Loon - Shorebirds: **Common Loon:** 7 Apr (3) Woods Reservoir, Franklin Co (JLI). **American Bittern:** 4 Apr (1) Shelby Bottoms (PDC). **Gadwall:** 11 Apr (2) Radnor L (NTOS), lrs. **Red-breasted Merganser:** 20 Mar (11) Old Hickory L., Sumner Co (Mike Smith). **Ruddy Duck:** 12 May (1) Cane Cr. Park, Putnam Co (Kenneth Morgan, Ginger Ensor, R.J. Moore), lrs. **Mississippi Kite:** 12 May (1) Putnam Co (SJS), first Co record. **Broad-winged Hawk:** 7 Apr (1) Sewanee, Franklin Co (JLI), ers. **Peregrine Falcon:** 29 May (1) Nashville (CAS). **Semipalmated Plover:** 12 May (1) Davidson Co (FCF). **Common Snipe:** 9 Mar (47) Shelby Bottoms (GBC), max.

Dove - Thrush: **WHITE-WINGED DOVE:** 25 May (1, photo) Clarksville, Montgomery Co (Mike O'Malley), 2nd documented state record. **Barn Owl:** 12 May (1) Cookeville, Putnam Co (Daniel Combs, Mary Peterson, Tom Roberts). **Whip-poor-will:** 6 Apr (1) Cheatham Co (Don Cassel), ers. **Alder Flycatcher:** 28 May (1) Putnam Co (SJS), first Co record. **Willow Flycatcher:** 27 May (1) Shelby Bottoms (RHC). **Least Flycatcher:** 12 May (1) Putnam Co (Barbara Stedman); 28 May (1) Radnor L (FCF, JF). **Eastern Kingbird:** 11 Apr (1) Radnor L (NTOS), ers. **Scissor-tailed Fly-**

catcher: 23 May (3) Rutherford Co (Janet Gorrel). **Loggerhead Shrike:** 12 May (pair nesting) Williamson Co (JKS). **Yellow-throated Vireo:** 5 Apr (1) Radnor L (FCF), ers. **Warbling Vireo:** 14 Apr (1) Joelton, Davidson Co (CAS), ers. **Philadelphia Vireo:** 22 Apr (1) Radnor L (JSD), ers; 28 May (1) Putnam Co (SJS), record late there. **Red-eyed Vireo:** 7 Apr (1) Radnor L (CAS), ers. **Bewick's Wren:** 18 Apr (pair) Rutherford Co (Terry Witt). **Swainson's Thrush:** 16 Apr (1) Radnor L (JKS), ers; 24 May (2) Shelby Bottoms (PDC, FCF, Mark Hackney), lrs. **Hermit Thrush:** 22 Apr (1) Radnor L (JSD), lrs. **Wood Thrush:** 10 Apr (1) Radnor L (FCF, JKS), ers.

Warblers: **Blue-winged Warbler:** 9 Apr (4) Radnor L (JSD, FCF, David Dortch), ers. **Golden-winged Warbler:** 14 Apr (1) Davidson Co (CAS), ers. **"Brewster's Warbler":** 13 Apr (1) Radnor L (Susan Marden). **Orange-crowned Warbler:** 15 Apr (1) Radnor L (JSD); 27 Apr (2) Radnor L (FCF, David Dortch). **Nashville Warbler:** 8 Apr (1) Radnor L (FCF), ers. **Chestnut-sided Warbler:** 23 Apr (1) Shelby Bottoms (JKS), ers. **Magnolia Warbler:** 27 Apr (1) Davidson Co (JKS), ers; 26 May (1) Radnor L (MAZ), lrs. **Cape May Warbler:** 25 Apr (2) Radnor L (FCF, GBC); 16 May (1) Radnor L (PDC, FCF). **Yellow-rumped Warbler:** 14 May (1) Radnor L (FCF), lrs. **Blackburnian Warbler:** 9 Apr (1) Nashville (Linda Kelly), ers. **Yellow-throated Warbler:** 6 Apr (1) Sewanee, Franklin Co (JLI), ers. **Bay-breasted Warbler:** 23 Apr (1) Shelby Bottoms (JKS), ers; 22 May (1) Radnor L (Mike O'Malley), lrs. **Cerulean Warbler:** 7 Apr (1) Percy Warner Park, Davidson Co (Sandy Bivens fide Kathy Shaw), ers; 11 Apr (3) Radnor L (GBC, PDC). **Prothonotary Warbler:** 6 Apr (1) Radnor L (FCF), ers. **Worm-eating Warbler:** 9 Apr (1) Macon Co (JF), ers. **Kentucky Warbler:** 10 Apr (1) Radnor L (FCF, JKS), ers. **Connecticut Warbler:** 11 May (1) Sumner Co (Richard Sanders); 14 May (1) Radnor L (JKS); 23 - 25 May (1/2/1) Shelby Bottoms (PDC, GBC, FCF, Mark Hackney). **Mourning Warbler:** 13 May (1) Radnor L (CAS, Terry Witt); 18 May (1) Williamson Co (RHC); 23 - 25 May (1) Radnor L (FCF); 28 May (2) Shelby Bottoms (PDC, MAZ); 28 May (1) Radnor L (FCF, JF). **Hooded Warbler:** 9 Apr (1) Radnor L (JSD), ers. **Wilson's Warbler:** 29 May (1) Radnor L (JKS), ties Nashville late date; 30 May (1) Williamson Co (JKS). **Canada Warbler:** 22 Apr (1) Radnor (JSD), ers.

Tanager - Finch: **Scarlet Tanager:** 9 Apr (1) Nashville (JKS), ers. **Vesper Sparrow:** 4 Apr (4) Shelby Bottoms (PDC). **Grasshopper Sparrow:** 7 Apr (2) Warren Co (Susan McWhirter), ers. **Lincoln's Sparrow:** 15 Apr (1) Radnor L (JSD), ers; 22 May (1) Radnor L (FCF), lrs. **White-throated Sparrow:** 14 May (1) Radnor L (PDC, GBC, FCF), lrs. **Blue Grosbeak:** 22 Apr (1) Shelby Bottoms (PDC, MAZ), ers. **Dickcissel:** 27 May (1) Shelby Bottoms (RHC). **Rusty Blackbird:** 13 Mar (14) Shelby Bottoms (PDC, GBC). **Orchard Oriole:** 10 Apr (1) Radnor L (FCF, JKS), ers. **Purple Finch:** 31 Mar (2) Nashville (Marian Delaplane), lrs.

Locations: Radnor L - in Davidson Co; Shelby Bottoms - in Davidson Co.

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CUMBERLAND PLATEAU / RIDGE AND VALLEY REGION — March was a bit

cooler than average, whereas April was considerably warmer than normal. March and April had a cumulative rainfall deficiency of 2-3 inches region-wide. As a result of the rain shortfall, the upper lakes in the TVA system did not reach full pool until much later than normal, if at all. The consistently good weather, with few substantial fronts, allowed most migrants to proceed at will. The passerine migration seemed to peak early; overall numbers were low, but diversity was good. Large numbers of migrants presumably flew over the region. The shorebird flight was good, however, particularly in May. Among 23 species of shorebirds, several uncommon species made strong showings.

Cormorants still nest at a restricted area in Hawkins County. A Wood Stork made a rare appearance, especially for spring. A Ross's Goose in late May was remarkably tardy. Peregrines nested for the fifth consecutive year near Chattanooga, but the attempt apparently failed. Rare enough in this region, a Least Tern away from a major river system was surprising. An Audubon's form of the Yellow-rumped Warbler was reported, joining just a couple of previous reports for the state. Several uncommon sparrows were found.

Loon - Stork: **Common Loon:** 17 May (1) Austin Springs (RLK); 27 May (1) Armstrong Bend, Meigs Co (BJJ, MJN), lrs. **Eared Grebe:** 5 Apr (1) Brainerd Levee (Susan Schott). **Double-crested Cormorant:** 17 Apr (5) Greene Co (DHM, ACL); mid Apr (34 nests) Clay Is., Holston Army Ammunition Plant, Hawkins Co (Bruce Cole); thru May (6) Austin Springs (RLK). **American Bittern:** 7 Apr (1) Austin Springs (AJT); 9 Apr (1) Brainerd Levee (KAC, BJJ, MJN, CJC); 16 Apr (1) Greene Co (DHM, ACL). **Great Blue Heron:** mid Apr (126 nests) Clay Is., Holston Army Ammunition Plant, Hawkins Co (Bruce Cole). **Great Egret:** 18 Mar (1) Kingsport (RLK), ers. **Snowy Egret:** 25 May (1) Austin Springs (RLK). **Cattle Egret:** 14/23 Apr (1/1) Hamilton Co (Clyde Blum/KAC); 19 May (1) Sequatchie Co (Carol Fegarido). **Black-crowned Night-Heron:** 9 Apr (4) Greene Co (DHM, ACL). **Wood Stork:** 24 Apr (1 im) Hamilton Co (Lois Bean, details submitted), first Co. record.

Goose - Rail: **Greater White-fronted Goose:** from winter thru 22 Mar (3) Brainerd Levee (KAC et al.). **Ross's Goose:** 22 May (1) Kingston Steam Plant (FLB, SAB), very late. **Gadwall:** 29 May (2) Kingston Steam Plant (KDE), lrs. **Blue-winged Teal:** 31 May into Jun (1) Brainerd Levee (KAC), lrs. **Canvasback:** 11 Mar (1) Greene Co (DHM, ACL). **Osprey:** 19 Mar (1) Hamilton Co (KAC), ers; 20 Mar (1) Kingsport (HPL, BKS, Reece Jamerson). **Bald Eagle:** 21 Apr (1 ad) Boone L., Washington Co portion (AJT et al.). **Cooper's Hawk:** nesting pairs at Austin Springs & at nearby Winged Deer Park (RLK, FJA). **Merlin:** 6/21 Apr (1) Hamilton Co (Bill Haley/BJJ). **Peregrine Falcon:** thru season 2 ad. showing nesting behavior at the Falling Waters Fall area of Signal Mtn., Hamilton Co.; at least 2 eggs were laid (the first on 2 Mar), but eggs never hatched (fide KAC). **Virginia Rail:** 28 Apr (1) Cove Lake SP (Jean Alexander). **Sora:** 14/23 Apr (2) Brainerd Levee (KAC); 28 Apr (1) Greene Co (DHM); 6 May (1) Limestone (RLK).

Shorebirds: **Black-bellied Plover:** 15/27 May (1/2) Kingston Steam Plant (RDH, DM, FLB, SAB); 31 May/3 June (1) Limestone (LCM, Don Holt/RLK). **Semipalmated Plover:** widespread in good numbers; 15 May (70) Kingston Steam Plant (RDH, DM, FLB, SAB), max. **Solitary Sandpiper:** 25 May (1) Limestone (RLK), new late date in NE Tenn. **Willet:** 24 Apr (11) Tenn. R., Hamilton Co (KAC); 28 Apr (1) Chickamauga L., Hamilton Co (BJJ, Daniel Jacobson); 27 May (1) Brainerd Levee (Betty Wampler). **Upland Sandpiper:** 4 - 13 Apr (2) Riverport, Hamilton Co (LAW, CJC et al.). **Marbled Godwit:** 13 Apr (3) Kingston Steam Plant (RDH, DM, FLB); 24 Apr (1) Tenn. R., Hamilton Co (KAC), first Co record. **Ruddy Turnstone:** 15 May (1) Kingston Steam Plant (RDH, DM, FLB, SAB). **Sanderling:** 15/29 May (8/1) Kingston Steam Plant (RDH, DM, FLB, SAB/KDE). **Semipalmated Sandpiper:** 22 May (150) Kingston Steam Plant (FLB, SAB), max; 3 June (4) Limestone (RLK), lrs. **Western Sandpiper:** 12 May (1) Greene Co (DHM, ACL). **White-rumped Sandpiper:** excellent flight; 15 - 29 May (max 40 on 22 May) Kingston Steam Plant (RDH, DM, FLB, SAB); 21/24 May (1) Greene Co (DHM, ACL); 23-24 May (20) Brainerd Levee (KAC et al.); 24 May (5) Sequatchie Co (CJC); 24 May (3) Limestone (RLK). **Dunlin:** 12 May (1) Greene Co (DHM, ACL); 22 May (15) Kingston Steam Plant (FLB, SAB). **Stilt Sandpiper:** 4 Apr (1) Brainerd Levee (LAW, CJC); 22 May (2) Kingston Steam Plant (FLB, SAB); 24 May (1) Greene Co (DHM, ACL); 28 May (1) Limestone (RLK). **Short-billed Dowitcher:** 12 May (16) Brainerd Levee (KAC, Ken Dubke); 12/21 May (1) Greene Co (DHM, ACL). **Long-billed Dowitcher:** 23 Apr (1) Brainerd Levee (KAC, BJJ, CJC, MJN). **American Woodcock:** 3 Mar (4) Rankin Bottoms, Cocke Co (DHM et al.); 28 Apr (3) Greeneville (DHM).

Gull - Hummingbird: **Laughing Gull:** 17 Apr (2) Fort Loudoun Dam, Loudon Co (Rick Waldrop). **Caspian Tern:** 22 May (3) Kingston Steam Plant (FLB, SAB). **Common Tern:** 22 May (3) Kingston Steam Plant (FLB, SAB). **Forster's Tern:** 13 Apr/25 May (1/2) Austin Springs (RLK); 28 Apr (12) Hamilton Co (KAC). **Least Tern:** 18 May (1) Sequatchie Co farm pond (Hayden Wilson). **Black Tern:** 22 May (14) Kingston Steam Plant (FLB, SAB). **Black-billed Cuckoo:** 21 Apr (1) Washington Co (AJT et al.); 27 May (1) Rankin Bottoms, Cocke Co (Michael Sledjeski, Leslie Gibbens). **Barn Owl:** late Apr - mid May (2 ad, 4+ yg) Johnson City (RLK et al.). **Rufous Hummingbird:** thru 9 Mar (1) Hamilton Co (Asten & Mary Graham), lrs of banded individual.

Flycatcher - Wren: **Olive-sided Flycatcher:** 12 May (1) Hamilton Co (Nelson Bennett); 17 May (1) Craven's House (KAC); 19 May (1) Cove Lake SP (Tony Headrick et al.). **Scissor-tailed Flycatcher:** 1 - 5 May (1) Knox Co (Wes James, m.ob.); 16 - 31 May (2) Sequatchie Co (Annette Seals, BJJ, m.ob.). **Loggerhead Shrike:** 11 Mar - 26 May (pair) Greene Co (DHM, ACL); early Apr - mid May (pair nesting) Austin Springs (AJT, RLK et al.). **Warbling Vireo:** 22 Apr thru May (7 sites/3 sites) Washington/Sullivan Cos. (RLK); 23 Apr thru May (4 sites) Greene Co (DHM, ACL). **Philadelphia Vireo:** 30 Apr (1) Hamilton Co (KAC, Daniel Jacobson). **Common Raven:** 19 Apr (1) Tri-cities Airport, Sullivan Co (Richard Lewis). **Horned Lark:**

Apr into June (1-2 at 3 sites) Limestone (RLK). **Brown-headed Nuthatch:** 27 May (1) Athens, McMinn Co (Stephen Sliger); 29 May (2) Kingston Steam Plant (KDE). **Sedge Wren:** 9/14 Apr (2/1) Brainerd Levee (KAC). **Marsh Wren:** 11 Mar/21 Apr (1) Greene Co (DHM); 14 Apr (1) Brainerd Levee (KAC).

Warbler - Dickcissel: **Golden-winged Warbler:** 25 May (18) Cross Mtn., Campbell Co (NeM, Dev Joslin). **Black-throated Blue Warbler:** 22 Apr (5) Craven's House (KAC et al.), max there. **"Audubon's" Yellow-rumped Warbler:** 14 Apr (1) Amnicola Marsh, Hamilton Co (Clyde Blum). **Swainson's Warbler:** 15 Apr (2) Cove Lake SP (NeM), ers; 28 Apr - 6 May (1) Baylor School, Hamilton Co (Jonnie Sue Lyons et al.). **Mourning Warbler:** 14 May (1) Craven's House (KAC, BJJ, MJN). **Wilson's Warbler:** 20 Apr, 3/10 May (3 singles) Craven's House (LAW, KAC). **Canada Warbler:** 14 Apr (1) Big South Fork, Scott Co (NeM), record early in region (& possibly in state). **Lark Sparrow:** 28 Apr (1) Hamilton Co (Jonnie Sue Lyons et al.). **Henslow's Sparrow:** 15 May (1) Craven's House (KAC, LAW, CJC, Benton Basham). **LeConte's Sparrow:** 17 Mar - 9 Apr (1) Riverport, Hamilton Co (BJJ, MJN, CJC et al.), first Co record. **Nelson's Sharp-tailed Sparrow:** 24 Apr (1) Austin Springs (RLK), record early in NE Tenn. **Lincoln's Sparrow:** 3 May (1) Hamilton Co (David Patterson). **Dickcissel:** 11 May into Jun (2+) Limestone (RLK et al.), 6th consecutive year site occupied; 17 May (2) Sequatchie Co (MJN); 24 - 26 May (1 - 4 at 2 sites) Greene Co (DHM, ACL).

Locations: Austin Springs - in Washington Co; Brainerd Levee - in Hamilton Co; Cove Lake SP - in Campbell Co; Craven's House - unit of Chickamauga National Military Park, Hamilton Co; Kingston Steam Plant - in Roane Co; Limestone - in Washington Co.

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EASTERN MOUNTAIN REGION — Virginia Rails were found nesting at Quarry Bog in Shady Valley this spring for the first time. This bog continues to add many new records for this location. South Holston Lake produced some noteworthy shorebird sightings, including the first Marbled Godwits for the area and a high count of Short-billed Dowitchers.

Loon - Rail: **Common Loon:** 31 Mar - 25 Apr (5 reports of 2 - 14, all in breeding plumage) S. Holston L & Watauga L (RLK). **Eared Grebe:** 12 Mar (2) S. Holston L (JWC et al.), lrs. **Double-crested Cormorant:** 9 Apr (19)/22 May (1) S. Holston L (JWC/RLK), max/lrs. **American Bittern:** 25 Mar/8 Apr (1) Quarry Bog (HPL, JWC, JLS). **Great Egret:** 31 Mar (1) Roan Mtn village (Joe McGuiness); 2 Apr (1) Middlebrook L, Sullivan Co (JWC); 13 Apr (2) S. Holston L (RLK). **Yellow-crowned Night-Heron:** 6 Apr thru period (2) Elizabethton, Carter Co (HPL et al.). **Glossy Ibis:** 8 Apr (7) Townsend, Blount Co (Jean Alexander, David Johnson). **Gadwall:**

thru 24 May (2) Fishery Park, Unicoi Co (BKS), lrs. **Northern Shoveler:** 31 Mar (17) Watauga L (RLK). **Canvasback:** 6 Mar (1) Watauga R, Carter Co (FJA). **Greater Scaup:** 12 Mar (2) S. Holston L (JWC et al.). **Common Merganser:** 9 Apr (2) S. Holston L (JWC). **Red-breasted Merganser:** 31 Mar (96) Watauga L (RLK), max. **Peregrine Falcon:** 14 Apr (1 on nest) near Alum Cave Bluff, GSMNP (AJT, DJT). **Virginia Rail:** 8 Apr thru season (1 - 3)/20 May (1 ad & 6 yg) Quarry Bog (JWC, JLS et al./Judy Musick, Janice Martin, JWC), first breeding record here.

Plover - Woodpecker: **Black-bellied Plover:** 13 Apr (1) S. Holston L (RLK). **Semipalmated Plover:** 17 May (2) S. Holston L (RLK). **Willet:** 17 May (1) S. Holston L (RLK). **MARBLED GODWIT:** 13 Apr (9) S. Holston L (RLK et al.), first area record. **Short-billed Dowitcher:** 12 May (33) S. Holston L (RLK et al.), new high count in area. **Common Snipe:** 31 Mar (70) Quarry Bog (HPL, Glen Eller), max. **Bonaparte's Gull:** 1 Apr (1) Shady Valley (HPL, LCM, AJT, Don Holt et al.), first there; 9 Apr (300) S. Holston L (JWC), max. **Ring-billed Gull:** 9 Apr (1000)/17 May (15) S. Holston L (JWC/RLK), max/lrs. **Caspian Tern:** 31 Mar - 13 Apr (4) S. Holston L (HPL, JWC et al.). **Common Tern:** 17 May (5) S. Holston L (RLK et al.). **Black-billed Cuckoo:** 28 May (1) Paint Mtn, Greene Co (DHM, ACL, LN). **Northern Saw-whet Owl:** 7 Apr (1) Clingman's Dome, GSMNP (DJT, CM); 29 Apr (1) Roan Mtn (FJA); 29 Apr (1) Big Bald Mtn, Unicoi Co (Joe McGuiness). **Red-headed Woodpecker:** 2 Apr thru season (pair) Holston Valley, Sullivan Co (JWC, Richard Lewis).

Flycatcher - Siskin: **Olive-sided Flycatcher:** 21 Apr (1 singing) Green Mtn, Greene Co (DHM, ACL, LN); 12 May (1) Cherohala Skyway, Monroe Co (DJT). **Blue-headed Vireo:** 11 Mar (1) S. Holston Dam (Audrey Hoff, James Brooks), ers. **Common Raven:** 25 Mar (3) Quarry Bog (JWC, JLS, HPL); 26 Mar - 21 May (5 reports of 1 - 3) Viking Mtn & Paint Creek area, Greene Co (DHM et al.); 29 Apr (3 yg) quarry at town of Watauga, Carter Co (RLK); 14 Apr (nest with 1 yg) GSMNP, Blount Co portion (AJT, DJT). **Bank Swallow:** 12 - 17 May (1) S. Holston L (RLK). **Marsh Wren:** 20 May (1) Quarry Bog (LCM, JWC et al.). **Canada Warbler:** 15 Apr (1) Alum Cave Bluff trail, GSMNP (AJT, DJT), very early. **Scarlet Tanager:** 13 Apr (1) Wilbur L, Carter Co (HPL, BKS), ers. **Savannah Sparrow:** 21 May (3 singing & 1 carrying food) Quarry Bog (RLK). **Nelson's Sharp-tailed Sparrow:** 20/24 May (2) Quarry Bog (LCM, JWC et al./FJA), heard singing, unusual for migrants of this species. **Blue Grosbeak:** 23 Apr (1) Shady Valley (JWC). **Bobolink:** 21 May (5) Quarry Bog (RLK), lrs. **Eastern Meadowlark:** 7 Apr (30+) Indian Gap, GSMNP (DJT, CM), near 6000 ft. elevation. **Rusty Blackbird:** 10 Mar (12) Quarry Bog (RLK et al.); 7 Apr (3) near Clingman's Dome, GSMNP (DJT, CM). **Red Crossbill:** 21 Apr (2) Green Mtn, Greene Co (DHM, ACL, LN); 12 May (2) Cherohala Skyway, Monroe Co (DJT). **Pine Siskin:** 29 Apr (1) Unaka Mtn, Unicoi Co (Audrey Hoff, James Brooks).

Locations: GSMNP - Great Smoky Mountains National Park; Quarry Bog - in Shady Valley, Johnson Co; Roan Mtn - in Carter Co; Shady Valley - in Johnson Co; S. Holston L - in Sullivan Co; Watauga L - in Carter Co.

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